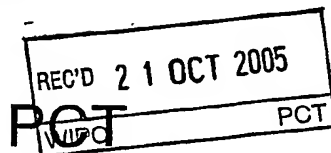


# PATENT COOPERATION TREATY

From the  
INTERNATIONAL SEARCHING AUTHORITY



To:

see form PCT/ISA/220

## WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.1)

Date of mailing  
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference  
see form PCT/ISA/220

**FOR FURTHER ACTION**  
See paragraph 2 below

International application No.  
PCT/GB2005/000698

International filing date (day/month/year)  
25.02.2005

Priority date (day/month/year)  
30.03.2004

International Patent Classification (IPC) or both national classification and IPC  
G02B26/10, G02B27/28, H04N3/09, H01Q15/00, H01Q15/24

Applicant  
REMTONS LIMITED

### 1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☒ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☒ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43b/s.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

### 2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

### 3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA:



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NL-2280 HV Rijswijk - Pays Bas  
Tel. +31 70 340 - 2040 Tx: 31 651 epo nl  
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Authorized Officer

Ward, S

Telephone No. +31 70 340-3547



**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

International application No.  
PCT/GB2005/000698

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**Box No. I Basis of the opinion**

---

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
  - ☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
  - a. type of material:
    - ☐ a sequence listing
    - ☐ table(s) related to the sequence listing
  - b. format of material:
    - ☐ in written format
    - ☐ in computer readable form
  - c. time of filing/furnishing:
    - ☐ contained in the international application as filed.
    - ☐ filed together with the international application in computer readable form.
    - ☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

International application No.  
PCT/GB2005/000698

**Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability**

The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non obvious), or to be industrially applicable have not been examined in respect of:

- ☐ the entire international application,
- ☒ claims Nos. 8-15

because:

- ☐ the said International application, or the said claims Nos. relate to the following subject matter which does not require an international preliminary examination (*specify*):
- ☐ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. are so unclear that no meaningful opinion could be formed (*specify*):
- ☐ the claims, or said claims Nos. are so inadequately supported by the description that no meaningful opinion could be formed.
- ☒ no international search report has been established for the whole application or for said claims Nos. 8-15
- ☐ the nucleotide and/or amino acid sequence listing does not comply with the standard provided for in Annex C of the Administrative Instructions in that:
  - the written form ☐ has not been furnished
  - ☐ does not comply with the standard
  - the computer readable form ☐ has not been furnished
  - ☐ does not comply with the standard
- ☐ the tables related to the nucleotide and/or amino acid sequence listing, if in computer readable form only, do not comply with the technical requirements provided for in Annex C-bis of the Administrative Instructions.
- ☐ See separate sheet for further details

**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

International application No.  
PCT/GB2005/000698

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**Box No. IV Lack of unity of invention**

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1. ☒ In response to the invitation (Form PCT/ISA/206) to pay additional fees, the applicant has:
- ☐ paid additional fees.
  - ☐ paid additional fees under protest.
  - ☒ not paid additional fees.
2. ☐ This Authority found that the requirement of unity of invention is not complied with and chose not to invite the applicant to pay additional fees.
3. This Authority considers that the requirement of unity of invention in accordance with Rule 13.1, 13.2 and 13.3 is
- ☐ complied with
  - ☒ not complied with for the following reasons:  
    **see separate sheet**
4. Consequently, this report has been established in respect of the following parts of the international application:
- ☐ all parts.
  - ☒ the parts relating to claims Nos. 1-7

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**Box No. V Reasoned statement under Rule 43b/s.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

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1. Statement

Novelty (N)	Yes: Claims	3-5
	No: Claims	1,2,6,7
Inventive step (IS)	Yes: Claims	
	No: Claims	1-7
Industrial applicability (IA)	Yes: Claims	1-7
	No: Claims	

2. Citations and explanations

**see separate sheet**

1. The following documents are referred to in this communication:

**D1 : WO03/075554**

**D2 : WO03/012524**

**Re Item IV**

**Lack of unity of invention**

2. The present application does not meet the requirements of Rule 13.1 PCT. Three embodiments are presented in the application:
- An embodiment based on a rotating drum (page 5, line 1 to page 10, line 6 and figures 1-6). This embodiment is claimed in claim 8 and subclaims.
  - An embodiment based on counter-rotating discs or mirrors (page 10, line 8 to page 16, line 25 and figures 7-11). This embodiment is claimed in claims 1, 6 and subclaims (in the drum embodiment, although there may be optional co-rotating mirrors or orthogonally-rotating mirrors, there are no mirrors rotating in opposite senses, and thus claims 1 and 6 do not relate to the drum embodiment).
  - An embodiment based on a single tilted rotating mirror (page 16, line 25 to page 18, line 25 and figures 12-13). This embodiment is not claimed.

**First invention - Claims 1-7**

3. For the reasons set out in paragraphs 6 to 8.3, below, claims 1,2,6 and 7 lack novelty, and claims 3-5 lack inventive step. The first invention cannot therefore be seen as solving any objective problem, nor can any "special technical features" in the sense of Rule 13.2 PCT be identified.

**Second invention - Claims 8-15**

4. D2 is the closest prior art identified for the second invention. Claim 8 differs from D2 in that the facets are each adapted to transmit radiation which is plane polarised in a first direction at 45° with respect to the rotary axis of the drum and to reflect radiation which is plane polarised in a direction at 45° to the rotary axis of the drum and perpendicular to the said first polarisation direction, radiation passing into the drum through whichever said side of the drum is currently facing said field of view and passing towards the diametrically opposite side will be plane polarised with a polarisation direction such as to be reflected back by said diametrically opposite side towards the rotary axis of the drum, each said polygon side being configured so as to act, when reflecting such radiation striking that side

from within the drum, as a concave mirror, to focus the radiation towards a receiver assembly which includes a radiation detector for such radiation. These technical features define the "special technical features" of the second invention in the sense of Rule 13.2 PCT, and may be used to define the objective problem to be solved by the second invention as providing an alternative drum scanning arrangement.

5. The above analysis shows that the first and second inventions do not have common or corresponding special technical features in the sense of Rule 13.2 PCT, nor are they solutions to related problems which could supply a single general inventive concept in the sense of Rule 13.1 PCT. Consequently the two groups of claims are not linked by common or corresponding special technical features and therefore define two different inventions which are not linked by a single general inventive concept as required by Rule 13.1 PCT.

**Re Item V**

**Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

6. The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claim 1 is not new in the sense of Article 33(2) PCT. Document D1 discloses (see the first 16 lines of claim 9 of D1, which corresponds to the embodiment of page 9 and figure 8) a scanning apparatus which is word-for word identical to that of claim 1 of the present application. Claim 1 therefore lacks novelty. It is noted that the other embodiments of D1, for example where the radiation is directed from the second mirror back to the first mirror before being directed to the receiver or receivers (see e.g. the abstract) also fall within present claim 1, and these other embodiments are therefore also novelty-destroying for claim 1.
7. The scan in D1 may be linear (see e.g. page 9, paragraph 2, line 10; claim 1, line 18), and so claim 6 lacks novelty in the sense of Article 33(2) PCT for the reasons mentioned above, *mutatis mutandis*.
- 8.1 The additional features of the following dependent claims are disclosed in D1:  
Claim 2: (see D1, claim 9, after "opposite senses")  
Claim 7: (see D1, page 9, paragraph 2)  
Hence claims 2 and 7 are not new in the sense of Article 33(2) PCT.

**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING  
AUTHORITY (SEPARATE SHEET)**

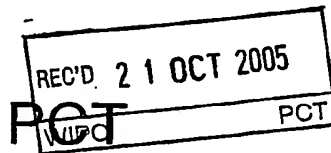
International application No.

PCT/GB2005/000698

- 8.2 Starting from figure 8 of D1, and in order to prevent the receiver (136) obstructing the optical path, it would be a routine measure for the skilled person to add a second Faraday rotator or quarter wave plate between wire grid polarizer (100) and mirror (122). Hence claim 3 lacks inventive step in the sense of Article 33(3) PCT.
- 8.3 The additional features of claims 4 and 5 represent routine modifications which would be evident in the light of D1. Hence claims 4 and 5 lack inventive step in the sense of Article 33(3) PCT.

# PATENT COOPERATION TREATY

From the  
INTERNATIONAL SEARCHING AUTHORITY



To:

see form PCT/ISA/220

## WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.1)

Date of mailing  
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference  
see form PCT/ISA/220

**FOR FURTHER ACTION**  
See paragraph 2 below

International application No.  
PCT/GB2005/000698

International filing date (day/month/year)  
25.02.2005

Priority date (day/month/year)  
30.03.2004

International Patent Classification (IPC) or both national classification and IPC  
G02B26/10, G02B27/28, H04N3/09, H01Q15/00, H01Q15/24

Applicant  
REMTONS LIMITED

**1. This opinion contains indications relating to the following items:**

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☒ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☒ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

**2. FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1b/s(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

**3. For further details, see notes to Form PCT/ISA/220.**

Name and mailing address of the ISA:



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**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

International application No.  
PCT/GB2005/000698

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**Box No. I Basis of the opinion**

---

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.  
☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
  - a. type of material:  
☐ a sequence listing  
☐ table(s) related to the sequence listing
  - b. format of material:  
☐ in written format  
☐ in computer readable form
  - c. time of filing/furnishing:  
☐ contained in the international application as filed.  
☐ filed together with the international application in computer readable form.  
☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

International application No.  
PCT/GB2005/000698

**Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability**

The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non obvious), or to be industrially applicable have not been examined in respect of:

☐ the entire international application,

☒ claims Nos. 8-15

because:

☐ the said international application, or the said claims Nos. relate to the following subject matter which does not require an international preliminary examination (*specify*):

☐ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. are so unclear that no meaningful opinion could be formed (*specify*):

☐ the claims, or said claims Nos. are so inadequately supported by the description that no meaningful opinion could be formed.

☒ no international search report has been established for the whole application or for said claims Nos. 8-15

☐ the nucleotide and/or amino acid sequence listing does not comply with the standard provided for in Annex C of the Administrative Instructions in that:

the written form

☐ has not been furnished

☐ does not comply with the standard

the computer readable form

☐ has not been furnished

☐ does not comply with the standard

☐ the tables related to the nucleotide and/or amino acid sequence listing, if in computer readable form only, do not comply with the technical requirements provided for in Annex C-*bis* of the Administrative Instructions.

☐ See separate sheet for further details

**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

International application No.  
PCT/GB2005/000698

---

**Box No. IV Lack of unity of invention**

---

1. ☒ In response to the invitation (Form PCT/ISA/206) to pay additional fees, the applicant has:
- ☐ paid additional fees.
  - ☐ paid additional fees under protest.
  - ☒ not paid additional fees.
2. ☐ This Authority found that the requirement of unity of invention is not complied with and chose not to invite the applicant to pay additional fees.
3. This Authority considers that the requirement of unity of invention in accordance with Rule 13.1, 13.2 and 13.3 is
- ☐ complied with
  - ☒ not complied with for the following reasons:  
**see separate sheet**
4. Consequently, this report has been established in respect of the following parts of the international application:
- ☐ all parts.
  - ☒ the parts relating to claims Nos. 1-7

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**Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

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**1. Statement**

Novelty (N)	Yes: Claims	3-5
	No: Claims	1,2,6,7
Inventive step (IS)	Yes: Claims	
	No: Claims	1-7
Industrial applicability (IA)	Yes: Claims	1-7
	No: Claims	

**2. Citations and explanations**

**see separate sheet**

1. The following documents are referred to in this communication:

**D1 : WO03/075554**

**D2 : WO03/012524**

**Re Item IV**

**Lack of unity of invention**

2. The present application does not meet the requirements of Rule 13.1 PCT. Three embodiments are presented in the application:
- An embodiment based on a rotating drum (page 5, line 1 to page 10, line 6 and figures 1-6). This embodiment is claimed in claim 8 and subclaims.
  - An embodiment based on counter-rotating discs or mirrors (page 10, line 8 to page 16, line 25 and figures 7-11). This embodiment is claimed in claims 1, 6 and subclaims (in the drum embodiment, although there may be optional co-rotating mirrors or orthogonally-rotating mirrors, there are no mirrors rotating in opposite senses, and thus claims 1 and 6 do not relate to the drum embodiment).
  - An embodiment based on a single tilted rotating mirror (page 16, line 25 to page 18, line 25 and figures 12-13). This embodiment is not claimed.

**First invention - Claims 1-7**

3. For the reasons set out in paragraphs 6 to 8.3, below, claims 1,2,6 and 7 lack novelty, and claims 3-5 lack inventive step. The first invention cannot therefore be seen as solving any objective problem, nor can any "special technical features" in the sense of Rule 13.2 PCT be identified.

**Second invention - Claims 8-15**

4. D2 is the closest prior art identified for the second invention. Claim 8 differs from D2 in that the facets are each adapted to transmit radiation which is plane polarised in a first direction at 45° with respect to the rotary axis of the drum and to reflect radiation which is plane polarised in a direction at 45° to the rotary axis of the drum and perpendicular to the said first polarisation direction, radiation passing into the drum through whichever said side of the drum is currently facing said field of view and passing towards the diametrically opposite side will be plane polarised with a polarisation direction such as to be reflected back by said diametrically opposite side towards the rotary axis of the drum, each said polygon side being configured so as to act, when reflecting such radiation striking that side

from within the drum, as a concave mirror, to focus the radiation towards a receiver assembly which includes a radiation detector for such radiation. These technical features define the "special technical features" of the second invention in the sense of Rule 13.2 PCT, and may be used to define the objective problem to be solved by the second invention as providing an alternative drum scanning arrangement.

5. The above analysis shows that the first and second inventions do not have common or corresponding special technical features in the sense of Rule 13.2 PCT, nor are they solutions to related problems which could supply a single general inventive concept in the sense of Rule 13.1 PCT. Consequently the two groups of claims are not linked by common or corresponding special technical features and therefore define two different inventions which are not linked by a single general inventive concept as required by Rule 13.1 PCT.

**Re Item V**

**Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

6. The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claim 1 is not new in the sense of Article 33(2) PCT. Document D1 discloses (see the first 16 lines of claim 9 of D1, which corresponds to the embodiment of page 9 and figure 8) a scanning apparatus which is word-for word identical to that of claim 1 of the present application. Claim 1 therefore lacks novelty. It is noted that the other embodiments of D1, for example where the radiation is directed from the second mirror back to the first mirror before being directed to the receiver or receivers (see e.g. the abstract) also fall within present claim 1, and these other embodiments are therefore also novelty-destroying for claim 1.
7. The scan in D1 may be linear (see e.g. page 9, paragraph 2, line 10; claim 1, line 18), and so claim 6 lacks novelty in the sense of Article 33(2) PCT for the reasons mentioned above, *mutatis mutandis*.
- 8.1 The additional features of the following dependent claims are disclosed in D1:  
Claim 2: (see D1, claim 9, after "opposite senses")  
Claim 7: (see D1, page 9, paragraph 2)  
Hence claims 2 and 7 are not new in the sense of Article 33(2) PCT.

**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING  
AUTHORITY (SEPARATE SHEET)**

International application No.

PCT/GB2005/000698

- 8.2 Starting from figure 8 of D1, and in order to prevent the receiver (136) obstructing the optical path, it would be a routine measure for the skilled person to add a second Faraday rotator or quarter wave plate between wire grid polarizer (100) and mirror (122). Hence claim 3 lacks inventive step in the sense of Article 33(3) PCT.
- 8.3 The additional features of claims 4 and 5 represent routine modifications which would be evident in the light of D1. Hence claims 4 and 5 lack inventive step in the sense of Article 33(3) PCT.